

http://en.wikipedia.org/wiki/Dirac_equation

Diracs' book on quantum mechanics

http://www.amazon.com/Principles-Quantum-Mechanics-International-Monographs/productreviews/0198520115/ref=dp_top_cm_cr_acr_txt?ie=UTF8&showViewpoints=1

4 stars:

Most people are introduced to QM through the Schrodinger picture, which is useful for building an intuitive feel for the subject. Unfortunately it also lends itself to picturing things in ways that are a little too classical, and at some point one has to make the transition from imagining actual waves evolving in physical space to the idea of state vectors evolving in Hilbert space. Dirac's transformation theory approach is an ideal tool in this regard, and THAT is why you read Dirac's book.

The best physics book since the Principia?

An Underappreciated Classic

5 stars: A generalized approach to quantum theory

... Dirac in this had to decide on the mathematical form in which quantum theory could be unified. Any author must decide at the outset between two methods. There is the symbolic method, which deals directly in an abstract way with quantities of fundamental importance, and there is the method of coordinates or representations, which deals with sets of numbers corresponding to these quantities. The second of these methods has usually been used practically exclusively.

The symbolic method, however, seems to go more deeply into the nature of things and to be more amenable to generalization into principles. For example, it enables one to express the physical laws in a neat and concise way, and will probably be increasingly used as it becomes better understood and its own special mathematics gets developed. It was for this reason that Dirac chose the symbolic method introducing the representatives later merely as an aid to practical calculation. This has necessitated a complete break from the historical line of development, but this break is an advantage through enabling the approach to the new ideas to be made as direct as possible.

Quantum mechanics as defined by Dirac is the application of equations of motion to atomic particles. It was first shown that atomic particles are subject to equations of motion when Bohr set up his theory of the hydrogen atom. The next big development was made when Bohr's student Heisenberg discovered the need for a non-commutative multiplication. The domain of applicability of the theory is mainly the treatment of electrons and other charged particles interacting with the electromagnetic field.

5 stars:

A generalized approach to quantum theory

Quite simply, this is the most important book written on the foundations of physics in the last 100 years. I read this when I was 18 & it persuaded me to pursue a career

in theoretical physics. It is still one of the few books in physics that I return to after 40 years.

Life is too short, so just read the 'Masters' - Dirac is the greatest master of physics in the 20th Century

Segre doesn't mention transformation theory

2 stars:

...This book is NOT the bible of QM. It's thin and quite lean. You will not find yourself using it as a reference, since there are much better books out there for that...

So, who is this book suited for, in my opinion? I think that only an experienced reader who would like to gain insight into the way Dirac understood QM should read this book. Otherwise, my verdict is: forget it, there are much better books out there.

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Also see:

<http://web.fccj.org/~ethall/quantum/quant.htm>

this guy doent mention dirac's TQM, but does say von neuman developed his own theory, which showed Heisenbergs and schrodingers were equivalent